DOCUMENT RESUME

ED 248 657 EC 170 436

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TITLE Experiential Learning as a Teaching Strategy for the Career Education of Hearing-Impaired College Students.
PUB DATE Jun 84
NOTE 86p.; In: DeCaro, James J., Ed. and Areson, Ann H., Ed. Teaching, Learning and Development: Volume II. See EC 170 433.
PUB TYPE Guides - Non-Classroom Use (055) -- Information Analyses (070)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS *Career Development; Career Education; *Experiential Learning; *Hearing Impairments; Learning Processes; Learning Strategies; *Models; Postsecondary Education; Theories

ABSTRACT

Part of a collection of papers commissioned by Foundations, a project designed to examine the career development needs of students entering the National Technical Institute for the Deaf, this paper considers the role of experiential learning. Section I reviews basic concepts, theories, and models underlying experiential learning. Experiential learning, as defined in this paper, refers to learning that has three primary characteristics: it is primarily self directed, inductive, and takes place outside the classroom. Confusion over the definition is cited, and models of learning (traditional and experiential) proposed by J. Coleman and D. Kolb are considered. The section concludes with a summary of advantages and disadvantages of experiential learning. Section II outlines a strategy for process learning and applies it specifically to career education with emphasis on the learning of transferable skills and knowledge. The final section addresses applications of experiential learning for hearing impaired students, stressing ways to accommodate strategies to the experiential deficiences of hearing impaired students. A model is proposed for diagnosing these deficiencies. (CL)

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Experiential Learning as a Teaching Strategy for the Career Education of Hearing-Impaired College Students

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SECTION I

EXPERIENTIAL LEARNING: CONCEPTS, THEORIES AND MODELS

What is Experiential Learning?

It may be impossible to develop a generally accepted definition of experiential learning. But it is important to try. In any case, it is necessary for all the parties in any discussion of experiential learning to know what each other's definitions are. Otherwise some vital areas, both of agreement and of disagreement, will be distorted by the differential use of terms.

For the purposes of this paper "experiential learning" refers to learning that has three primary characteristics:

first, it is primarily SELF-DIRECTED;

second, it is primarily INDUCTIVE; and

third, it takes place primarily OUTSIDE THE CLASSROOM.

You may already have serious questions about the repeated use of the flexible word "primarily". Justifiably so. The definition of the subject is at once so important and so difficult that it seems necessary to hedge it with qualifiers and to explain them at some length. It may help if we look at each of the three elements of the definition above: the locus of control (self-directed or

other directed); the sequence of learning events (inductive or deductive); and the site of the learning (in or out of the classroom). It will be necessary to answer also a fourth question about the time when the learning took place since experiential learning is equated by some with prior learning (i.e., learning that took place before the learner sought formal recognition for it).

Locus of Control: Who was (or is) in Charge of the Learning Process?

It is tempting to conclude simply that experiential learning is self-directed learning. This conclusion does find its way into some definitions, but it is usually qualified in some important way. Perhaps the closest to a purist approach is in CAEL's Annotated Literature Guide which concedes that "all learning is experiential", but concludes that, for its purposes, experiential learning refers "especially to learning that occurs outside the classroom in work settings, communities, or self-directed accomplishments" (Stutz and Knapp, 1977, p. 1).

However, it is clear as the "or" in the sentence suggests, that non-classroom learning is not necessarily self-directed. Probably the majority of internships and similar campus-sponsored field studies are "guided experiential learning" (Whitesage and Glassy, 1979, p. 2). Still a strong argument can be made that "sponsorship"

and "guidance" do not amount to "direction" of the learning process by the campus sponsor. CAEL's Handbook on College-Sponsored Experiential Learning describes experiential education as a "learning activity, sponsored by an educator, in which the learner has the primary responsibility for the educational endeavor and for a specific task or work assignment related to his or her placement, which is the major vehicle for the student's learning" (Duley and Gordon, 1977, p. V).

In summary, about the locus of control in experiential learning, it seems best to stay with the qualified statement that "experiential learning is primarily self-directed".

Nature of the Learning Process: Is Experiential Learning Inductive or Deductive?

For some educators this is a single key to the definition of experiential learning. They conclude that it is inductive, while traditional or classroom learning is deductive. David Kolb and James Coleman (both of whose conclusions are discussed in detail below) are among the leading scholars who emphasize the inductive nature of experiential learning. Kolb (1976) argues that experiential learning starts with "concrete experience" and is followed by "reflective observation" and then "abstract conceptualization" (p. 3). Coleman (1976), in

distinguishing the "traditional" or "information assimilation" learning mode from the "experiential" mode, concludes that the most important difference is the point at which generalizations are made. He defines experiential learning as an inductive process in which generalizations follow "action and observation of concrete events" (p. 56). Hadley Nesbit (1977), in CAEL Student Guide, boils it all down to a simple definition: experiential education is "learning by doing" (p. 2).

What this kind of evidence it is tempting to conclude that all experiential learning is inductive. But, again, it seems better to continue with the qualified conclusion that experiential learning is primarily inductive. The reason for this conclusion is that "all learning involves experience" (Stutz and Knapp, 1976, p. 1).

Classrooms are experiential settings. Listening to lectures and reading books are experiences. And, if the lecture or the reading assignment contains a generalization such as a theory or a principle, then the distinction between deductive and inductive learning disappears as an element in the definition of experiential learning. A possible exception to this conclusion arises when the use of the term "experiential" is confined to non-symbolic (i.e., involving language) learning.

The particular importance of this distinction for

learning by hearing-impaired persons is obvious and will be discussed at length in Section III of tnis paper. We will return to this point in the summary at the end of this section, after we discuss the roles of the site of learning and of the time of learning.

The Site of Experiential Learning: Does it Always Take Place Outsice the Classroom?

"Off-campus learning" and "experiential learning" are sometimes used as interchangeable terms. Duley and Gordon (1977), who call experiential education "an off-campus learning activity" add a footnote to their definition explaining that "off-campus is not a fully accurate term because some students work in college offices" (p. v). They go on to justify it, however, as a way of distinguishing between traditional and "non-traditional studies that occur in non-classroom settings". While this is a very useful distinction, it leaves two loopholes: Laboratories (classrooms of a sort); and simulations, in classrooms, of outside conditions. Are labs and simulations "experiential" learning situations? If all learning is experiential, they certainly are. If experiential learning is primarily self-directed and primarily inductive, they may or may not be. Laboratories, at least for undergraduates, are rarely self-directed learning experiences in the sense of the learner's having

the choice of experimenting or not experimenting, or even of experimenting on "x" instead of "y". Nor is the learning from the lab always purely inductive, since the general principle may be introduced in lectures or in assigned reading and then "tested" or "demonstrated" (rather than "discovered") in the lab. Much the same can be said of simulation.

In summary, about the site of experiential learning, again, it seems best to stick to the conclusion that experiential learning takes place primarily outside the classroom (and laboratory).

The Time of Learning: Is Experiential Learning Only That Which Takes Place Before the Learner has Matriculated?

We've already seen above, in the numerous references to "sponsored" experiential learning, that CAEL defines experiential learning without reference to the time, or formal student status, of the learning. Nevertheless, there is a persistent strain of thought, both in and outside the academic profession, that the term experiential learning refers only or primarily to learning that takes place before the learner seeks academic recognition for it. It should not be surprising, given the elements of definition discussed above of experiential learning as primarily self-directed, inductive, off-campus learning. Once "sponsorship" (likely to mean a measure of other-

directedness) is introduced, the learning is likely to become less purely inductive even if it remains entirely off-campus. This is so even if the "sponsor" is an off-campus, non-academic agency such as the armed forces or a private corporation. In fact, these non-collegiate sponsores of instruction, just like the colleges and universities, utilize the traditional classroom mode as well as the experiential learning mode that is so hard to define. Thus, while a U.S.A.F.I. course or an I.B.M. course, for example, might qualify as prior learning in the sense that it occurred before the student enrolled in a college, it might not qualify by any of our criteria as experiential.

In summary, both prior and sponsored learning may be either traditional or experiential. The time at which the learning took place has no necessary relationship to any of the three criteria discussed above: locus of control, inductive or deductive process, or the site of the learning. Whatever we may conclude that experiential learning is, prior experiential learning is simply that portion of it, sponsored or not, that took place before the learner presented the learning to the institution that is considering it for academic recognition.

The terms "prior" and "sponsored" experiential learning have just been described as essentially irrelevant

when our assigned task is to define experiential learning. An additional comment is appropriate at this point, however, to reaffirm the importance of both of these is a discussion of experiential learning. The two types of experiential learning are both defined in terms of time. The word "prior" is a reasonably good one to describe its side of the story. Prior learning is learning that takes place before the institution that is asked to recognize it was involved. It is, however, important to specify that we are talking about prior experiential learning in order to distinguish it from transfer credit earned, at a prior time, at another institution.

The word "sponsored" is not quite as effective because it really means two things: sponsored, in the sense of planned or supervised by the institution rather than entirely self-directed; and sponsored by this institution and thus, in terms of time, postdating enrollment by the learner as a student.

This distinction between prior and sponsored experiential learning is a vital one for both educational and political reasons. Educationally, a strong case can be made that sponsored (i.e., planned) experiential learning is more effective than learning that just happens. Additionally, it is a great deal easier to assess levels of achievement and to evaluate learning for possible

award of credit when the assessor is able to observe the learning in progress.

Politically, academic institutions are very cautious about recognizing learning that took place under somebody else's (or nobody's) auspices. This reluctance is aggravated, particularly in a time of declining enrollments, by economic concerns. The more credit that is given for outside learning, the less tuition is paid for inside learning--or, at least, so goes the argument.*

In summary, "prior" and "sponsored" are two distinct kinds of experiential learning programs. They require different kinds of faculty expertise and different types of administrative processing, and they serve very different purposes, both for the learners and for the academy. The potential advantages of both types of experiential learning programs will be discussed in Section II, below.

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* While this is a very prevalent argument, it should be noted that it may well be a false one. For one thing, fee schedules for the assessment of prior learning can compensate for lost instructional income. In addition, it is often counter-argued that the recognition of prior learning actually increases enrollments by attracting students who would not otherwise consider going to school.

The Symbolic Medium: Does Experiential Learning Rely Exclusively on Non-Symbolic Inputs?

In introducing James Coleman's definition above, a vital point was omitted in order to emphasize, at that stage of our discussion, Coleman's distinction between traditional learning as deductive and experiential learning as inductive. It is necessary to return, however, to another important distinction Coleman makes between traditional (or "information-assimilation") learning and experiential learning.

Putting his point affirmatively, Coleman (1976) says that the traditional, information assimilation mode uses the symbolic medium of language for the information input that is the first step of the learning process. Putting his point negatively, Coleman (1976) defines experiential learning as a process that does not have the advantage of symbolism--i.e., no language inputs. If we were more interested in the clarity than in the utility of our definition of experiential learning, we would seize on this point as the cornerstone of our work. Experiential learning would be defined without any of the "primarily's" as "self-directed, inductive learning by doing or observing without any symbolic (language) input".

The value of such purist definition, however, is severely limited. It is essential for research purposes,

and it is applicable for pre-language learning. For our purposes, however, it has limited utility since we are committed to the study of experiential learning at the collegiate level and, therefore, to learning that implies "a conceptual as well as a practical grasp of the knowledge or competence acquired" and learning that is "applicable outside the specific context in which it was acquired" (Willingham, 1977, p. 12). Whether such a level of learning can be acquired without the use of the symbolic language medium is doubtful. But, in any case, it is clear that "experiential learning" as the term is currently used in postsecondary education always assumes, and usually relies heavily upon, the necessary use of symbolic language in the learning process.

Summary and Conclusions on Definition of Experiential Learning

Where does all of this leave us with respect to a working definition of experiential learning? If the pure definition of experiential learning as learning without language symbols is unacceptably narrow, surely the umbrella conclusion that "all learning is experiential" is unacceptably broad. Both definitions are defensible; neither is useful for the present purposes.

We are back where we started from with the conclusion that experiential learning differs from the

traditional classroom learning in three ways: experiential learning is primarily self-directed, inductive, off-campus learning. "Primarily" must remain, especially with respect to the first two criteria. An internship or co-op work placement, for example, even when off-campus by several thousand miles might be a heavily supervised, deductive learning environment--but still be considered by the campus to be entirely experiential learning. Conversely, a work experience might be virtually unsupervised at the work site, but may be coupled with an on-campus seminar in which the learner periodically receives an injection of "other" direction that casts a deductive shadow over the learning process. This leads us to a conclusion widely supported by post-secondary educators (and, incidentally, supportive of our emphasis on a qualified definition) that the ideal learning process is an individualized mix of traditional and experiential modes, involving a shared locus of control, a combination of inductive and deductive reasoning, and both on and off-campus learning sites.

After a long research study, one major source calls this combination "experience-based" learning and defines it as involving:

A continuum of learner involvement levels, ranging through:

> didactic/symbolic (lectures, texts, exhibits, demonstrations, etc.)
>
> simulation (labs, mock trials, role-playing, etc.)
>
> community or field-based (work and other off-campus activities)
>
> (Jenks and Murphy, 1980, p. 2)

While Jenks and Murphy thus identify a continuum of learning including all of the traditional trappings of lectures and libraries, they do qualify their definition with the conclusion that learning based solely on the didactic/symbolic end of the continuum is not "experience-based".

In his introduction to CAEL's Principles of Good Practice in Assessing Experiential Learning, Warren Willingham sets a careful stage for the study of experiential learning. It is worth quoting in full as a concluding comment on the definition of experiential learning.

> While CAEL focused upon certain types of learning, frequently in non-classroom settings, it is important to observe first that all learning is in some real sense experiential. Furthermore, CAEL holds that all learning or order to be most effective should have both an experiential and a theoretic component.

Classrooms are experiential settings. A critical aspect of the improvement of classroom instruction is the enrichment of the variety and significance of direct and vicarious experiences of the phenomenon under study. This is recognized by the fact that experiential learning and its assessment often receive emphasis in traditional classrooms through special projects, research, laboratory exercises, and so on. Classroom learning tends, however, to place more emphasis on the theoretic component partly from habit and partly because of the inherent limitations in the types of experience that can be usefully mediated in the school or college setting. A more positive reason for theoretic emphasis in the classroom is the efficiency and power of verbal and mathematical symbols in organizing learning and generalizing its application to other situations.

The label "experiential learning" is not meant to suggest that classroom learning cannot or should not have a substantial experiential component. It is rather that CAEL's emphasis has not been upon classroom

> mediated learning or upon learning where the primary emphasis is upon symbols. CAEL emphasizes assessment of learning in situations in which the priority is rather upon observing, interacting, performing, making things happen, feeling the effects of these activities, noting responses of others, etc. (Willingham, 1977, pp. 12-13)

How Does Experiential Learning Take Place?

Just as we have noted that all learning is in some sense experiential, we can also suggest that all learning is, or can be, in some sense self-directed. The essence of the case for this conclusion is that whenever some "other" directed learning does occur it is at the express invitation of the learner. This may be a little far-fetched if we carry it to the extreme conclusion that four collegiate years of other-directed learning is really self-directed learning because the student enrolled in the institution voluntarily. It is much more meaningful applied to a shorter time scale. During a particular term, for example, a learner may decide to take 10 or 15 weeks of other-directed learning in the form of a series of lectures, reading assignments and other activities determined by a teacher. On an even

shorter time scale, the learner may consider one hour of other-directed learning as an important, but temporary, component of a learning plan that includes as well a number of self-directed components. Overall, the total learning experience is self-directed--calling, as necessary and appropriate, on the help of others.

There is a very great advantage to this approach to the learning process. It recognizes that the learner is in charge. And it opens the door to thoroughly individualized learning. Individualized learning is essential. Because each individual has unique learning objectives, learning styles and strengths, and learning backgrounds each individual needs a unique mix of other-directed and self-directed learning, of inductive and deductive learning approaches, and of classroom and field learning.

If we accept this individualized mix of traditional and experiential learning as the ideal, how do we go about achieving it? A prerequisite is a careful examination of the way in which learning (and for our purposes, particularly experiential learning) takes place.

Coleman's model. James Coleman distinguishes between traditional, or information-assimilation, learning and the experiential learning mode. Each process, he says, has four steps:

TRADITIONAL OR INFORMATION-ASSIMILATION	EXPERIENTIAL
1. information (from symbolic medium)	1. action (experienced or observed)
2. understanding of general principles	2. application in particular situations
3. application of principle in a specific situation	3. inference of general principle from specific activity
4. re-application of general principle in new situations	4. re-application of general principle in new situations

The fourth step in the two processes is identical. It is really a learning outcome. Complete learning, according to Coleman, involves sufficient understanding of a general principle that it can be applied in a variety of different contexts. The second and third steps in the two processes are also identical, but are reversed. The general principle comes first in the deductive traditional learning mode, followed by its application to specific situations. The specific application is first in the inductive experiential mode, then a general principle is inferred. The first step for Coleman in the traditional mode is the receiving of information--from a symbolic medium (i.e., language). In experiential learning Coleman (1976) says that information is "generated only through

the sequence of steps themselves" (p. 51). The first step is simply experience, narrowly defined to include acting and observing, but to exclude information transmitted symbolically.

Combining the two Coleman models. If we accept the conclusion that the best learning process is an individualized mix of learning modes, then what we need to do is to combine Coleman's two models. It is relatively easy. The combined model should be useful both to self-directed learners, and to the facilitators they may choose when they need the assistance of some other-direction. The combination looks like this:

ELEMENTS OF AN APPROPRIATE "MIX" OF TRADITIONAL AND EXPERIENTIAL LEARNING

Step 1. = Information Acquisition

either:

from <u>symbolic media</u> such as listening to lectures or reading books	or	from experiencing or observing actions

Step 2. = Information Processing

either:

<u>deductive</u>--i.e., getting a general principle from reading or listening and then applying it in a specific situation.	or	<u>inductive</u>--i.e., repeating the experienced or observed action in a particular situation and then conceptualizing it as a general principle.

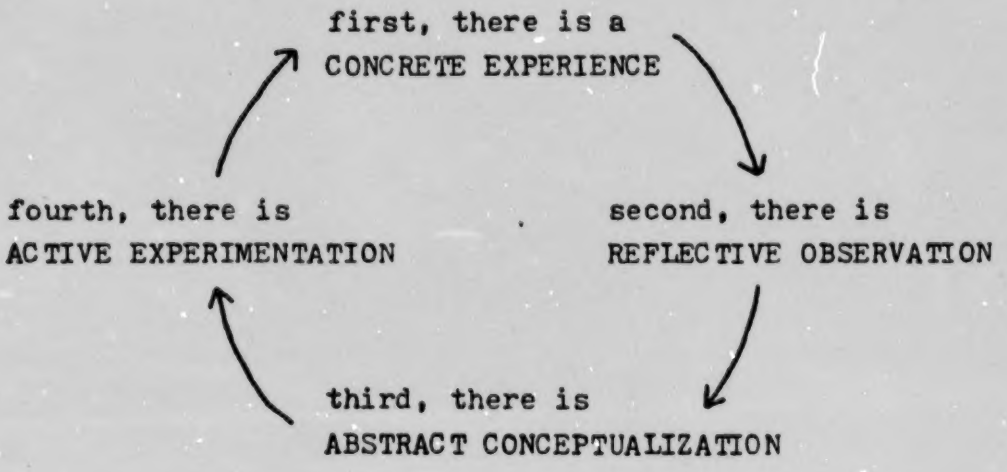
Step 3. = Transfer Application

Utilizing the understanding of the general principle to apply the learning in new circumstances.

Combining the models does little to Coleman's conclusions other than to encourage the learner to select as appropriate from both of his models. The possible exception is in Step 1. Coleman himself does not consider

that the experience or observation in Step 1 of his experiential model constitutes "information acquisition". The combined model comes closer perhaps to David Kolb's description of experiential learning.

Kolb's learning cycle. Like Coleman, David Kolb (1976) distinguishes four steps in the process of experiential learning. Unlike Coleman, he does not distinguish between two learning processes, but assumes that all learning is experiential, and that it proceeds around as a circle as follows:



Then, the learner is ready for a new cycle of learning, based on the foundation of something already learned. In an important sense, then, it is not a learning cycle, but a learning spiral, each new concrete experience being acquired on a foundation of prior learning.

Kolb's first step is like the mixed Coleman models on the previous page. It is the acquisition of information from experience--and the experience can be either passive (lecture or reading) or active (doing). Kolb's second and third steps together form the second step in the mixed Coleman--and since he puts the abstract conceptualization (theorizing or developing a general principle) after the concrete experience and the reflective observation, it is strongly tilted toward the inductive process. Kolb's fourth step includes Coleman's, but it goes further and considers the "re-application in new circumstances" not only to be the final step in one learning sequence, but also to be the immediate stimulus and foundation for another learning cycle.

How Does Experiential Learning Take Place? -- Summary and Conclusions

At the collegiate level, all learning not only should be, but necessarily is, a mix of traditional and experiential modes. The input of information into the learning process is from both symbolic language and direct action/observation. The development of generalizations from the informational input proceeds both inductively and deductively. The application of general principles to new situations, both for the purpose of accomplishing a specific goal and for the experimental purpose of

testing and further developing the principle, is done in and out of classrooms and with varying degrees of advice from other people.

The particular balance of other-direction and self-direction, inductive and deductive, and on-campus and off-campus learning sites is controllable. What is needed is for learning facilitators (faculty members, work supervisors, and other mentors) to help each learner to discover the appropriate mix of learning modes in any particular situation. Some of the considerations that help to determine the appropriate mix are addressed in the following section.

Advantages and Disadvantages of Experiential Learning

As a profession, we are still in the very early stages of studying the nature of experiential learning and discovering ways in which we can prescribe appropriate mixes of experiential and traditional learning for individual students. One of the problems with trying to list advantages and disadvantages of experiential learning is that they vary both with the particular learner and with the particular subject that is being studied.

Learner Readiness

For example, it can be argued that other-directed

deductive learning is time efficient. We should avoid re-inventing the wheel. But, it depends on the learner's characteristics. Deductive learning relies heavily on the symbolic medium of language. At the pre-language stage, the efficiency of the deductive process is severely limited by the inefficiency of the language process. Even when the learner's language abilities are high, the success of the deductive approach depends on an attitudinal receptivity that may vary among individuals. A time-saving general principle that is perfectly sound learning advice may be rejected by a non-receptive learner because it comes from a parent or from a teacher. Conversely, it may be followed religiously in another instance because it comes from an admired and respected mentor (including parents and teachers sometimes).

Nature of the Subject

Differences in the subject matter being learned also affect the utility of different learning modes. For example, consider the differences between learning that "fire is hot" and learning that "sexual intercourse may lead to pregnancy". There are at least two crucial differences between these two general principles: immediacy and certainty. Fire will burn the bare skin immediately and every time you put your hand in it. Deductive learning would be better, but at least inductive learning is

quick. Pregnancy not only takes longer, but it doesn't happen every time. Deductive learning is not only faster, but as Coleman (1976, p. 56) points out, there is some evidence that "because of the lapse of time", there are people who never make the connection between sexual intercourse and birth at all.

Four Tentative Conclusions

Given these qualifications about differences in learners and in the subjects being learned, we must be tentative about listing advantages and disadvantages of experiential learning. Nevertheless the following conclusions may be useful.

1. Time efficiency. Pure experiential learning suffers from the disadvantage that it often takes a lot longer than guided learning to discover general principles. This is more true for some learners than for others, and for some subjects than for others. In general, however, learning is faster if it is assisted at appropriate points by deductive injections of general principles already proven by somebody else's experiences.

2. Motivation. Experiential learning may increase the learner's motivation because the reward for successful learning by doing is immediate and intrinsic. Traditional classroom learning often suffers from the fact that motivation, such as good grades, is extrinsic and

delayed rather than intrinsic and immediate.

3. Retention. Experiential learning often has the advantage of better retention than purely traditional learning because the learner has directly experienced the results of the learning in action. The "forgetting curve" is dramatic in deductive classroom learning when there is no action environment for immediate and meaningful applications of the lessons learned.

4. Complete learning. Both the experiential and the traditional learning modes have disadvantages with respect to the completeness of the learning process. Learning is not complete until the learner understands the general principles and is able to apply them in a variety of circumstances. Traditional learners often understand the general principles but have difficulty in applying them. Experiential learners often can perform particular actions very well, but don't know the governing principles behind them, and thus can't transfer the learning to other circumstances.

Complete learning, with appropriate balance of theoretical knowledge and practical skill, is best achieved through a combination of traditional and experiential learning techniques.

As we look at some of the applications of experiential learning strategies in the next section of this

paper we will also be addressing ways in which the optimum balance of learning modes can be achieved for individual learners. In the present state of the art that is a difficult task. Among the most important agenda for experiential educators in the 1980's is the extension of learning theory. We need to extend and to refine the lists of advantages and disadvantages, and to find more effective ways of matching them to the characteristics of learners and of the subject matter of their studies.

SECTION II

APPLICATIONS OF EXPERIENTIAL LEARNING AS TEACHING/LEARNING STRATEGIES

Experiential learning can be applied to two broad categories of purposes: those having to do with the learning process itself; and those that involve specific content areas. We will discuss the "process" area first because it is prerequisite to the others. If the students don't first learn how to learn from experience their subsequent learning in specific content areas will be random at best. The purpose of exposing students to the process first is to replace "trial and error" experiential learning with systematically planned learning. After we have outlined a strategy for process learning we will apply it specifically to career education with emphasis on the learning of transferable skills and knowledge.

The Process: Learning How to Learn from Experience

"Lifelong experiential learning" is becoming a popular phrase in educational journals and in the brochures of many post-secondary institutions. The term may be new, but the process is not. In fact, it must be accepted as a "given" for this discussion that all of us and all of our students are lifelong experiential learners. The question is not whether our students should become

experiential learners. They all are. The questions are whether and how we can help them to become effective experiential learners.

Learning Plans

An effective learning plan has three parts: learning objectives; learning activities selected to achieve these objectives; and provisions for both formative and summative evaluation of progress. Although neither Coleman nor Kolb addresses the question of objectives explicitly, the learning process they describe can be applied effectively to the task of determining learning objectives. There are numerous references to the setting of objectives in the CAEL literature. Both CAEL and a mushrooming series of career-related publications and workbooks have identified a wide selection of exercises and other materials for clarifying values and selecting learning objectives.

Once learners know what it is they want to learn, the Coleman and Kolb models provide excellent outlines of the process that is addressed by the other parts of the learning plan: selection of appropriate learning activities; and conducting an effective evaluation. There are some reasonably straightforward ways in which the overall effectiveness of this process can be maximized. We will look at each of them briefly under the three stages of the merged Coleman and Kolb models.

(Stage One--Information Acquisition)

This subject is what Coleman refers to as "symbols" in his traditional mode and as "action or observing" in his experiential mode. It covers what Kolb calls "concrete action" as the source of information. Whatever we choose to call it, the acquisition of information that is useful for achieving learning objectives can be maximized if the learner internalizes three basic habits:

1. Learners should take charge of their own learning--including, most importantly, the decision whether and when they should temporarily relinquish direction of the learning process to others.

All learning should be self-directed. But an important part of effective self-direction is knowing when to invite information from others. In other words, the first rule is to plan an appropriate combination of experiences, including both the traditional reading and lecture sources, and the activity sources.

2. Learners should habitually utilize both their own and others' experiences.

This may appear to be the same rule as the first just stated above. That rule, however, concerns the direction of the learning process, including the information acquisition part of it. This second rule concerns

only that part of the process that is self-directed and is experiential in Coleman's non-symbolic sense. There are two ways of gaining benefit from others' experiences: hearing about them; and observing them at first hand. This rule promotes the latter. The total input of information from non-symbolic, experiential sources is multiplied many fold when the "concrete experience" is broadened to include the experiences not only of self, but also of as many others as possible.

3. Learners should acquire information both from positive and from negative experiences.

There is a common tendency to consider that experiential learning is "trial and error" learning, rather than "cause and effect" learning in which both positive and negative effects are analyzed for patterns that may add up to general principles. At Kolb's second and third steps the "reflective observation" and "abstract conceptualization" have a lot more raw material to work with if all of the experiential results, good and bad, are included as information to be processed.

(Stage Two--Information Processing)

4. Learners should develop the habit of keeping an analytical record (log or journal) on a regular basis.

Effective learning requires more rigorous and

systematic analysis than most of us can do without the aid of pencil and paper. Reflective observation and abstract conceptualization will be more effective when the concrete experiences are recorded and organized for repeated reference.

5. Logs and journals should be selective and related to specified learning objectives.

Some valuable lessons are learned without having been consciously sought. But the most effective learning is pursued learning--learning for which there is strong motivation specifically related to carefully planned objectives that are regularly reviewed and prioritized.

6. Logs and journals should be analyses, not simply collections of facts.

Factual information--who, what, when, where--is a necessary and important foundation for analysis. But a useful journal must be primarily pointed toward the "how?" and "so what?" questions. That is the way the bridge is built from concrete experience, via reflective observation, to abstract conceptualization. That is the way we can discover those general principles that are the ultimate target of learning.

(Stage Three--Application and Evaluation)

7. Evaluation should be a part of the learning plan, from the beginning, and should be a continuous process.

It is important to include evaluation as part of the planning process because both the choice of methods and the implementation of the plan must be related effectively to the learning objectives and to the learning activities that are undertaken to achieve them. The evaluation process must be continuous (i.e., formative rather than exclusively summative) as a source of feedback that enables the learner to make any appropriate revisions in the learning process--such as eliminating an activity that is not contributing what was expected of it, or extending a learning activity that is providing unanticipated benefits.

8. Appropriate balance must be sought between self-evaluation and others' evaluations.

Nobody knows the learner as intimately as the learner does, and nobody is as personally affected by the outcome of the learning process. Self-evaluation is therefore an absolutely necessary ingredient in a successful plan. But all of us have blind spots about ourselves, and we do not begin the learning process as experts in what we want to learn or it would not have become a priority learning objective. Thus two kinds of other evaluation are called for: someone who knows the learner intimately and can compensate for the blind spot; and someone who knows the subject intimately and can provide expertise for evaluation of progress. In general, a good rule is "the

more evaluators the better"--up to a point where there is optimum coverage of all possible viewpoints without unnecessary repetition.

9. The number and type of evaluation instruments, like the number of qualifications of the evaluators, should be sufficient to afford complete evaluation.

Again, a good rule in general is "the more evaluation instruments, the better"--without unnecessary repetition and always ensuring that the type of instrument used is consistent with the learning objectives and learning activities, as well as with the learning styles and preferences of the learner.

10. Experimentation with new activities, including planned attempts to apply new principles developed by the learner, is an ultimate means of evaluation.

Kolb's "active experimentation" and Coleman's "reapplication of principles in new circumstances" describe a neat combination of evaluation and application of learning, but the process of experimentation is itself a concrete experience that completes the circle and starts a new experiential learning cycle.

Prior Learning Assessment

In addition to learning plans (essentially they are

for what CAEL calls "sponsored learning") there is anothe process application of experiential learning to the asses ment of prior learning. While the learning plans discussed above are primarily for the individual learner, the assessment of prior learning is a vital interest not only for the individual, but also for the teaching institution that is facilitating further learning and for the employer as a "consumer" of the learning outcomes.

The purposes and uses of prior learning assessment vary with the three parties: learners, educators and employers. For the learner and the educator (and for the employers to the extent that they are involved in facilitating further learning) the most basic purpose of the prior learning assessment is to provide an appropriate starting point for continued learning. It is never very easy to decide where to go to or how to get there unless we know where we are to start with.

Of special interest, both to the learner and the facil tators of further learning is the role of recognition of prior learning as it relates to learner motivation. Whether recognition is in the form of diagnosis, placement (academic or career), waiver of requirements, or actual award of credit, it can be a significant motivating factor. Students who are forced to re-learn what they already know, or who are expected to perform

at levels for which they are under-prepared, or workers who are either under-employed or are assigned tasks that are beyond their levels of competence--all of these are expensive mismatches that can be avoided if prior learning is accurately assessed before new learning or work tasks are undertaken.

Principles of Assessment

The techniques of assessment and the principles that are applied to maintain quality assurance are covered in detail by various CAEL publications. A Compendium of Assessment Techniques covers the full range of techniques with illustration of each and references for further study (Knapp and Sharon, 1975). Principles of Good Practice in the Assessment of Experiential Learning gives a detailed description of the various stages in the assessment process, and then lists a series of principles that are essential to their effective implementation (Willingham, 1977).

For our present purposes we include only a brief summary of some of those principles that should be followed by institutions with prior learning assessment programs. Good programs that address the purposes described in the previous section require significant efforts in faculty and program development in order to meet the following standards:

- It is prior learning, not experience per se, that is assessed for possible academic recognition.
- Academic recognition for prior learning should be granted only for college-level learning that is currently valid and that has not already been recorded on the learner's transcript.
- Award for credit for prior learning must be made by faculty members who are trained in the techniques of assessment, and who are qualified in the subject for which credit is granted.

Credit for the Assessment Process

The greatest weakness of prior learning is that it usually has occurred without most of the advantages of planning which are listed above as ten rules to follow. Prior learning is largely incidental learning. Nevertheless there may be justification for granting some credit to students (and some teaching credit to faculty members) who successfully complete an assessment program. Some important new learning can result, and some of the prior learning can be fleshed out or "perfected" in the process of assessing it. The new learning is the range of "learning how to learn" lessons described above. A by-product of assessing the past is the development of a learning plan for the future. In fact, as we have already noted, every learning plan ought to be based on an evaluation of prior learning.

Applications of Experiential Learning Strategy for College Career Education

There are many bridges between the process applications we have discussed and the subject applications to which we now turn. The learning process itself is one of the most important things one can learn in college, or use in college or on the job. But, beyond learning how to learn, how can experiential learning be applied to two major undertakings: getting a college degree; and preparing for a lifelong career.

Before we look at each of these areas separately we need to consider the changing relationship between them. In the past it has been reasonably accurate to assume that there would be a significant correlation between major in college and the graduate's subsequent career. That assumption is increasingly invalid. In the 1960's, for example, more than 70% of college graduates entered professional and technical fields. But, in the 1970's fewer than half of the college graduates went into professional and technical careers (Occupational Outlook Quarterly, 1978-79, p.). A few projections by the Bureau of Labor Statistics tell the story dramatically: more than one-third of the jobs that will exist in 1985 do not exist in 1980; by 1984, the average person will be working at five to seven careers during a lifetime;

fewer than half of college graduates by 1985 will be working in careers that are related to their majors in college (Occupational Outlook Quarterly, 1978-79, p.).

Given these sobering trends and statistics it seems necessary to re-define the relationship between college and career. In the discussion that follows we will put strong emphasis on the development in college of those "transferable" areas of knowledge and skills that are common to most careers.

Experiential Learning and College Education

Experiential learning can be used in various ways to complete college requirements or to supplement them with non-credit activities. Prior learning assessment programs, as noted above, can play a significant role in increasing student motivation, in placing students at advanced levels, waiving some requirements, and granting formal credit. Prior learning is potentially useful for any part of a student's degree program--major, general education, electives and special requirements. The assessment of prior learning for credit by examination is common in most institutions and many fields of study. When the student's prior learning claim exactly matches a course or a requirement of the institution the assessment problem is relatively simple. Unless large number of students seek to qualify for credit, no special program or unusual

administrative mechanism is necessary beyond the kind of "credit by examination" that is standard practice.

In many cases, however, prior learning from work, volunteer or travel experience is interdisciplinary, cutting across numerous departmental and curricular lines. Insitutions that are willing to commit themselves to this kind of assessment have special problems to resolve in order to reap the special rewards that go with success in the endeavor. First, since the learning outcomes being assessed are not coterminous with existing courses, or resident in a single discipline, an interdisciplinary faculty team is needed. Second, the faculty will probably need some special training to cope with the technical problem of assessing prior learning from a variety of sources. Third, additional administrative arrangements will have to be made for applications, fees and transcription of the results. Finally, ideally the curriculum of the institution should be re-cast in competency-based terms and "mapped" * to clarify the nature and

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* "Mapping" is a term used in CAEL literature to describe a process for the clarification of learning outcomes. It involves three steps: describing each learning outcome in a particular curriculum (i.e., converting the curriculum to competency-based terms); identifying the contribution of each learning outcome in relation to other outcomes (i.e., drawing a "map" or chart showing the sequencing of learning activities; and relating each learning outcome to appropriate assessment procedures for evaluating it).

sequencing of learning outcomes. If these two curricular improvements were simply for the purpose of facilitating the assessment of prior learning they couldn't be advocated or adopted widely. However, like many other quality measures undertaken by experiential educators, these two improvements are long overdue in traditional programs as well.

Sponsored experiential programs, such as internships and cooperative education, provide colleges and universities--and the students and communities they serve--with opportunities to add new strengths to their programs. One advantage of a good prior learning program as a foundation for the sponsored learning that follows, is that it can identify individual students' learning styles and preferences as well as their learning needs. This kind of information is valuable in determining whether, when, where and why particular students might benefit from planned experiential learning activities.

Depending on the student, and on the subject being studied, sponsored experiential learning offers a number of advantages. The opportunity to relate theory and practice is almost universally recognized as the most basic reason for sending students into the field. Under the general umbrella the specific advantages of sponsored experiential learning vary with the subject matter.

There are, however, some common skills and knowledge areas that may be appropriate learning objectives in virtually any experiential learning environment. Problem-solving techniques, decision-making, development of interpersonal skills, and the opportunity to work in interdisciplinary situations are among the learning objectives common in internships and cooperative education programs. However, in a CAEL survey in 1979-80 the following five items were perceived by experienced practitioners as the most important learning outcomes in contract learning programs:

1. greater responsibility for one's actions
2. enhanced sense of ownership of one's achievements
3. increased ability to define measurable goals
4. greater self-motivation to learn
5. improved self-concept
6. more effective integration of theory and practice

(Breen, 1980, Table 7)

Decision-mak.ng, problem-solving and interpersonal skills ranked 15th, 16th and 20th in the Breen survey, and the same practitioners only rated them 17th, 20th and 15th respectively as "most important" outcomes to be sought.

Experiential Learning and Career Education

Many terms are used to describe the various aspects of career education. For our present purposes we will use "career education" as an umbrella term and divide it into three areas for discussion as follows: "career exploration" will be used to describe that part of career education that is devoted to the choice of a career; "career development" will be used to describe the acquisition of transferable skills and knowledge that will be useful in a variety of careers; and "career training" will be used to describe the acquisition of technical skills and knowledge for a specific career. Experiential learning both prior and sponsored, can be a valuable tool in all three branches of career education.

Career exploration. Given the facts that most people will have five to seven careers in their lifetimes, and that most college graduates will work in careers not directly related to their majors, the question of career choice is not a simple matter of deciding which one. Career exploration has been increasingly recognized as a process of determining the type of work activities a person likes and can perform well, rather than of the specific job the person will undertake. With respect to the role of experiential learning, what this means is that the scales are tipped strongly in the direction of prior

learning assessment and of volunteer work, rather than paid work assignments for career exploration. This does not mean that paid work assignments are not useful for purposes of making career choices. All of the student's past and present experience, including paid work, are useful sources of information about strengths and weaknesses and likes and dislikes. But the formally sponsored internship or cooperative education placement (because they require prior knowledge and skills useful to employers) are much more useful in later stages of career education. Work experience may be useful to students as job exploration, but is not as likely to be helpful--or even tolerable for--employers.

On the other hand, volunteer activities, particularly if the student has some specific learning objectives in mind, may be very useful in the career selection process. Students who don't know, for example, whether they like working with small children, or with older people, can find volunteer assignments in nursery schools or senior citizens homes. These activities, particularly when coupled with a classroom or counseling session, can add a useful experiential dimension to the analysis of career preference.

Assessment of prior learning is probably the most effective potential application of experiential learning

to the problem of career exploration. Specifically, what is needed first in choosing a career field is to analyze the individual's values and skills. What is needed second is to match those preferences and strengths with compatible career fields. Assessing prior experiential learning offers an excellent opportunity for the analysis of both values and skills. The results of effective prior learning assessment should offer a clear profile, not only of what was learned (skills and knowledge), and how well (levels of competence), but how it was learned (a key to learning styles), and why some things were learned and others were not (a key to both value preferences and skill levels).

While this may be an ideal (and a potential) role for prior learning assessment it is clear that contemporary practice is not particularly effective toward these ends. In his survey of portfolio assessment practices for CAEL, Breen (1980, Table 2) found that the most frequently reported learning outcomes resulting from preparation of a portfolio were improved self-concept, sense of ownership of one's achievements, ability to distinguish between experience and learning, ability to organize information, and more realistic attitude about one's own strengths and weaknesses. This indicates considerable success in developing a profile of what was

learned and how well. However, it indicates much less success in the identification of values and goals. Increased ability to set educational goals was 8th on the list of reported learning outcomes, clarification of career goals was 13th, more realistic career planning was 18th and increased ability to clarify one's values was 23rd on a list of 25 outcomes rated by experienced practitioners.

Career development. There is a lot of overlap between the career exploration stage and the career development stage. In an era when the average person has many careers during a lifetime, the process of career exploration may, in fact, be viewed as continuous. When exploration is joined by the development stage the emphasis shifts to the sharpening of those skills that have been identified as both within the individual's range of value preference and competence potential, and needed in the potential career field(s) that have been identified in the exploration stage.

While prior learning assessment may already have identified patterns of individual skills and basic competences, sponsored learning can be very effective in sharpening existing skills and in developing new ones that are within the individual's range of competence. Since career decisions will not in every case be final

at this stage, the most effective efforts are in the development of transferable skills and knowledge that will be useful in a variety of careers. Sponsored experiential learning can play a major role in this vital developmental activity.

In a study for the California State University and College System (CSUC), Paul Breen has listed seventy-six career-related liberal skills that he defines as "transferable, functional abilities that are required in many different problem-solving and task-oriented situations" and are "interdisciplinary abilities involving many areas of human development (e.g., cognitive, affective, social, psychological and moral development)". (Breen, Footnote 1, Product 2) Breen divides the seventy-six abilities into nine categories. (The complete list is appended to this paper.) Some of the items on this comprehensive list might not be necessary learning objectives for all people. For example, those not interested in advancement to supervisorial assignments might not need "management and administrative" skills such as "delegating responsibility" and "motivating and leading people". Similarly, those interested in manual work or service activities might not need "research and investigation" skills such as "designing experiments" or "testing the validity of date".

Most of the Breen list however, describes skills

that are not only transferable among many careers, but essential to virtually all careers. For example, "communication skills" such as "listening, writing and speaking", and "human relations and interpersonal skills" such as "interacting effectively with peers and supervisors", are among the most common job requirements listed by employers in almost any field.

Some of Breen's seventy-six transferable liberal skills are commonly and effectively taught in the classroom. Most of them, however, are abilities that require an integration of theory and practice that may be achieved most successfully through an appropriate mix of classroom and experiential learning. Almost all of Breen's list appear in one or more of the twenty-five categories of his CAEL study of learning outcomes and program activities. In that study he found that "over 75% of the practitioners rated 'actual work experience' as the single most 'highly important' program activity influencing student learning" (Breen, 1980, p. 8). This, coupled with the emphasis that prospective employers commonly give to "experience" as a qualification, amounts to a strong endorsement for experiential learning as a career development strategy.

It should be noted, before we turn to the more job-specific aspects of career training, that both prior learning assessment and sponsored experiential learning can

make important contributions to the development of career related liberal skills. In the CAEL survey, Breen (1980, p. 10) reports that "many of the most significant portfolio assessment learning outcomes and the activities perceived as 'most important' for producing those outcomes are also some of the most significant learning outcomes and the 'most important' activities commonly found in contract learning programs".

Career training. For students who have already made firm career choices the utility of experiential learning has long been recognized. Internships and related types of work experience are already incorporated into the traditional programs of many disciplines and subject areas. However, there are still several improvements that need to be made in the application of experiential learning strategies in this stage of career education. First, the strategy needs to be applied to more fields. While it has been common in teaching, social work and in many technical subjects, it is only recently being applied with good results in such fields as history, with internships in libraries, company archives and a wide variety of research activities.

Second, even in many of the most firmly established internships there is a need for improved learning and assessment strategies. Often it is assumed, by both the

employer and the campus, that on-the-job experience is, in fact, on-the-job training, i.e., that experience automatically means learning. But, between the assumption and the actual accomplishment the development of formal learning plans is too often ignored or treated so casually that important learning opportunities are missed or jeopardized.

Finally, many established internships and work experience programs are utilized exclusively for training in job-specific skills. Extending the scope of this learning objective would provide an excellent opportunity for continuing the development of the transferable liberal skills discussed in the previous section.

Summary. Both prior and sponsored experiential learning are valuable sources of career education. Their relative roles tend to follow contrasting patterns: prior learning assessment is more helpful in the earlier stages of career exploration, and not as useful in the career training for those who have made firm career decisions. (Though if it has not been undertaken prior to the career decision, it is important that it is done before, or at least concurrent with, job-specific training.)

Sponsored experiential learning is less feasible (and probably less useful) for career exploration, but offers exciting opportunities for career development and

for the more job-specific learning objectives of career training.

SECTION III

APPLICATIONS OF EXPERIENTIAL LEARNING FOR HEARING-IMPAIRED STUDENTS

In his forward to Edna Levine's book, The Psychology of Deafness, Boyce Williams (1960, p. viii) comments on the author's "great capacity to adjust theory to the hard facts of existence". In a sense, that is the task to which we now turn as we seek ways to apply experiential learning strategies to the college education of hearing-impaired students. It is a task made more difficult by both a paucity of theory in experiential learning, and some differences in viewpoints about what the hard facts of existence for hearing-impaired learners really are.

We will begin with the assumption that, like hearing students, hearing-impaired students need an individualized mix of traditional and experiential learning that reflects their individual learning needs, styles, strengths and weaknesses. To this we will add the assertion that there is no difference, initially, between hearing and hearing-impaired learners except in their hearing. Depending on a number of factors, however--including the age of onset, the degree of impairment, and a full range of environmental influences--the single, initial hearing deficiency may be extended into a much more complex pattern

of experiential deficiencies. The purposes of this section are to explore the nature of this experiential deficiency pattern, to suggest a preliminary model for assessing it, and then to consider whether and how experiential learning strategies can be accomodated to the experiential deficiencies of hearing-impaired students.

Experiential Deficiencies of Hearing-Impaired Students

As we have already seen, the successful use of experiential learning as a teaching strategy depends on the analysis of two things: first, the learner's accumulated prior learning; and second, the learner's skills at the learning process. When applying this approach to hearing-impaired students, we need to determine two things about their experiential deficiency: first, the cumulative knowledge deficiencies--i.e., what they have missed out on in the past; and second, projected skill deficiencies--i.e., what, if anything, might restrict their capacity to learn in the future.

The cumulative experiential deficiency results both from what is not heard and what is not done. The range of this cumulative deficiency varies greatly. What has not been heard depends on both the age of onset and the degree of impairment. It may vary from absolutely no knowledge gained from hearing inputs for those born

totally deaf, to a rich lifetime of hearing experience for "deafened adults" whose sudden "handicap does not take anything away from them except their hearing" (Jacobs, 1974, p. 58).

What has not been experienced by doing varies with nearly as much effect, but from influences that are much harder to measure. Among the factors that encourage or discourage "doing" by hearing-impaired persons are intelligence, personality and a long list of environmental influences including, most importantly, family and school. The variety of ways in which these influences combine and interact leads to a full range of results from the experiential sufficiency of the intelligent and mature person who has been accepted and become educated, to the extreme experiential deficiency of those who suffer from "learned helplessness". This latter deficiency is particularly relevant for our discussion because it is the direct result of a blockage in the individual's experiential learning system. Adele Thomas (1979, p. 210) has concluded that "at the crux of the learned helplessness concept is the conclusion that it is not the loss of rewards as such, but the loss of control over the situation that produces those rewards, which causes the passivity and decrease in persistence inherent in helplessness. When an individual's actions do not alter a situation, there

appears to be no connection between outcome and action".

Two primary aspects of successful experiential learning are missing in the scenario described by Thomas: self-direction of the learning process, and the opportunity to experience the relation between outcome and action. Environmental influences that deprive any child of these advantages will add significantly to the experiential deficiency that the child carries as a handicap into adult life.

While this particular deficiency is not confined to the hearing-impaired, it can be aggravated for them by an environment that is overprotective, or by one that completely excludes the hearing-impaired person from participation in routine activities. Among other things, this experiential deprivation may show up specifically in terms of educational or career planning as a severe deficiency in knowledge of the world of work.

Compensation and Correction

Whatever the extent and nature of the cumulative experiential deficiency, two questions should be asked about it before we make any conclusions about the effect it may have on future experiential learning. First, the deficiency in hearing inputs may be compensated for by enriched inputs from other sources. As Fusfeld (1967, p. 270) points out, because hearing-impaired children

are "compelled to rely more heavily on the non-auditory senses, (these senses) are re-enforced, or keyed, to a relatively greater degree than is the case with hearing children". While these enhanced inputs from other sources cannot totally compensate for the loss of auditory inputs their positive effects clearly reduce the necessary experiential deficiency of hearing-impaired persons. In calculating their readiness for experiential learning their teachers need to consider the possible offsetting effects of some experiential surpluses from visual, kinesthetic and olfactory sources.

Additionally, the learning readiness of hearing-impaired students may be enhanced by the application of corrective activities. Experiential deficiency is not confined to those with impaired senses. Virtually all prior learning assessment uncovers gaps in the learning outcomes. In fact it is one of the major benefits of prior learning assessment that it not only identifies what has and has not been learned, but also how well or how completely it was learned. In short, prior learning assessment yields a knowledge and skills profile that includes weaknesses as well as strengths. Many of the experiential deficiencies thus identified can be corrected. While this sometimes requires special remedial efforts, it is often possible--especially if there are

some experiential surpluses partially compensating for some of the deficiencies--to individualize the learning program in such a way that experiential gaps can be filled without interrupting normal progress.

Prior learning assessment is not pure magic. However, it would be difficult to overrate its potential role as an educational tool. By identifying individual learning profiles, prior learning assessment becomes an indispensable tool for all students. For those with experiential deficiencies it has special values as a source of recuperative education.

Deficiencies in Learning Skills

We have been discussing deficiencies in knowledge that may result from reduction or absence of auditory inputs. These knowledge deficiencies are, themselves, a major factor in determining the capacity for future learning. But there may be a greater problem. The question, put bluntly, is whether hearing-impairment causes learning impairment?

It is not necessary here to spend much time on the relationship between hearing and intelligence. The myth that hearing loss affects intelligence should have been laid to permanent rest long ago. In passing, however, it still has to be noted that false assumptions about the relationship between intelligence and hearing

impairment may themselves be an indirect factor influencing the learning capacity of hearing-impaired students. These assumptions may be held both by those who have hearing impairment and the normally hearing who play important facilitative roles in their learning environment.* Leo Jacobs, totally deaf since birth, has written at length on the stereotyping of deafness by the hearing community. He is very frank about the fact that "because of the etiology of deafness, a larger proportion of deaf people than hearing have additional handicaps". But, he points out that "deaf adults cannot be stereotyped; they are essentially human beings with normal faculties, abilities and weaknesses except for a deficient sense of hearing" (Jacobs, 1974, p. 55).

But stereotyping persists and must be counted as a negative environment factor. Jacobs (1974) sums it up in his portrayal of "The Deaf as a Minority Group" and concludes that "the majority group status of the deaf is producing more numerous and greater problems for them than the handicap itself" (p. 17). Hans Furth (1966, p. 60) also emphasizes the role of environment factors:

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* The writer was told by a professor at the National Center for Deafness at (Northridge, California), herself deaf, that, "I always thought that hearing people were more intelligent--all of them".

> I would not deny that the 'experiential deficiency' of deaf youngsters is related indirectly to their inability to hear and use language. But I blame the environment and the schools for not being sufficiently inventive to work around the language problem and to create an intellectually challenging atmosphere.

Furth's conclusion that the experiential deficiency of deaf youngsters is related indirectly to their inability to hear and use language is based on many years of detailed research. He has tackled head on the question that is central to a discussion of the learning capacity of hearing-impaired students: Is a mature level of thinking possible without language?

The question is relevant, as we have already seen in discussing the Coleman and Kolb models, for both normally-hearing and hearing-impaired learners. In its narrowest definition, experiential learning is exactly that: Learning without symbols. We are, however, already committed to t e proposition that the ideal in learning is an individualized mix of learning modes, including those that rely on linguistic symbols. Furthermore, we are concerned here with college-level learning that assumes some level of language competence. Those assumptions modify the need to consider whether thinking is possible without

language. But, because the most pervasive experiential deficiency of hearing-impaired learners is linguistic weakness, it seems necessary to give further consideration to the role of language as a learning tool.

Much of the research on the subject has been with children. Some of the conclusions--for example, that "the notion of symmetry is largely a perceptual concept that can be grasped without verbal articulation" (Furth, 1973, p. 57)--seem at first to be irrelevant for the level of complexity of college learning. Even though Furth concludes from his study of learning about symmetry that "a person can understand and communicate his understanding of a logical principle without using language" it is a long leap from there to the conclusion that college-level learning of principles more complex than symmetry is possible without language.

Furth (1966) himself makes the leap repeatedly:

> "Knowledge or lack of knowledge of linguistic symbols is apparently largely irrelevant for the intelligent understanding of probability" (p. 62).

> "Failure to master a verbal language does not bar a deaf person from attaining a mature level of thinking

if he is so motivated" (p. 71).

> "Thinking is obviously not based on language ability" (Furth, 1973, p. 58).

Goetzinger (1967), commenting on the work of Furth and his associates, specifically applies these conclusions to adolescents and adults and concludes that retardation involving "conceptual discovery", "inferential reasoning" and "conceptual transfer" is "merely a temporary setback no longer apparent at an older age level" (p. 293).

To some practitioners these conclusions seem to be contradicted by the learning difficulties they find in many hearing-impaired college students. Teachers and counselors at the college level frequently report that hearing-impaired students find abstract conceptualization (Kolb's third step in the experiential learning process) "extremely difficult" and an "area of frustration". "Inability to project", "weak reasoning and logic" and "transferability problems" are mentioned by practitioners as "probably language-dependent" difficulties that impede learning for many hearing-impaired students. (In passing, it may be significant to note that these same difficulties are persistent, and some

would even say rampant, in many normally-hearing college classrooms.)

The gap between the theorists' findings and the practitioners' experience is probably more apparent than real. Their hearing loss alone need not put hearing-impaired students at a permanent and necessarily disastrous learning disadvantage. Furth (1966) closes the gap this way:

> Deaf people are similar to people from an impoverished social and intellectual environment. If the culture and the surrounding life habits do not habitually foster or at least encourage habits of thinking, formal thinking is less likely to emerge, or at least it emerges with much less frequency than in an environment that provides opportunities for thinking. On the other hand, failure to master a verbal language does not bar a deaf person from attaining a mature level of thinking if he is so motivated (p. 71).

More research is needed on the experiential deficiencies of hearing-impaired learners, particularly at the college level. But for the moment it seems reasonable to conclude that hearing-impaired college students are subject to two types of experiential deficiencies that might affect their academic performance: their knowledge

base may have gaps reflecting reduced auditory input; their learning capacity may be restricted by insufficient development of their thinking abilities. Both types of deficiency may be aggravated by low levels of language competence, but both may be counteracted by high levels lf language competence. The experiential deficiencies of hearing-impaired learners can be diagnosed and they can be treated. We turn next to the prospects for developing a model for these purposes.

A Model for the Diagnosis of Experiential Deficiency of Hearing-Impaired Students

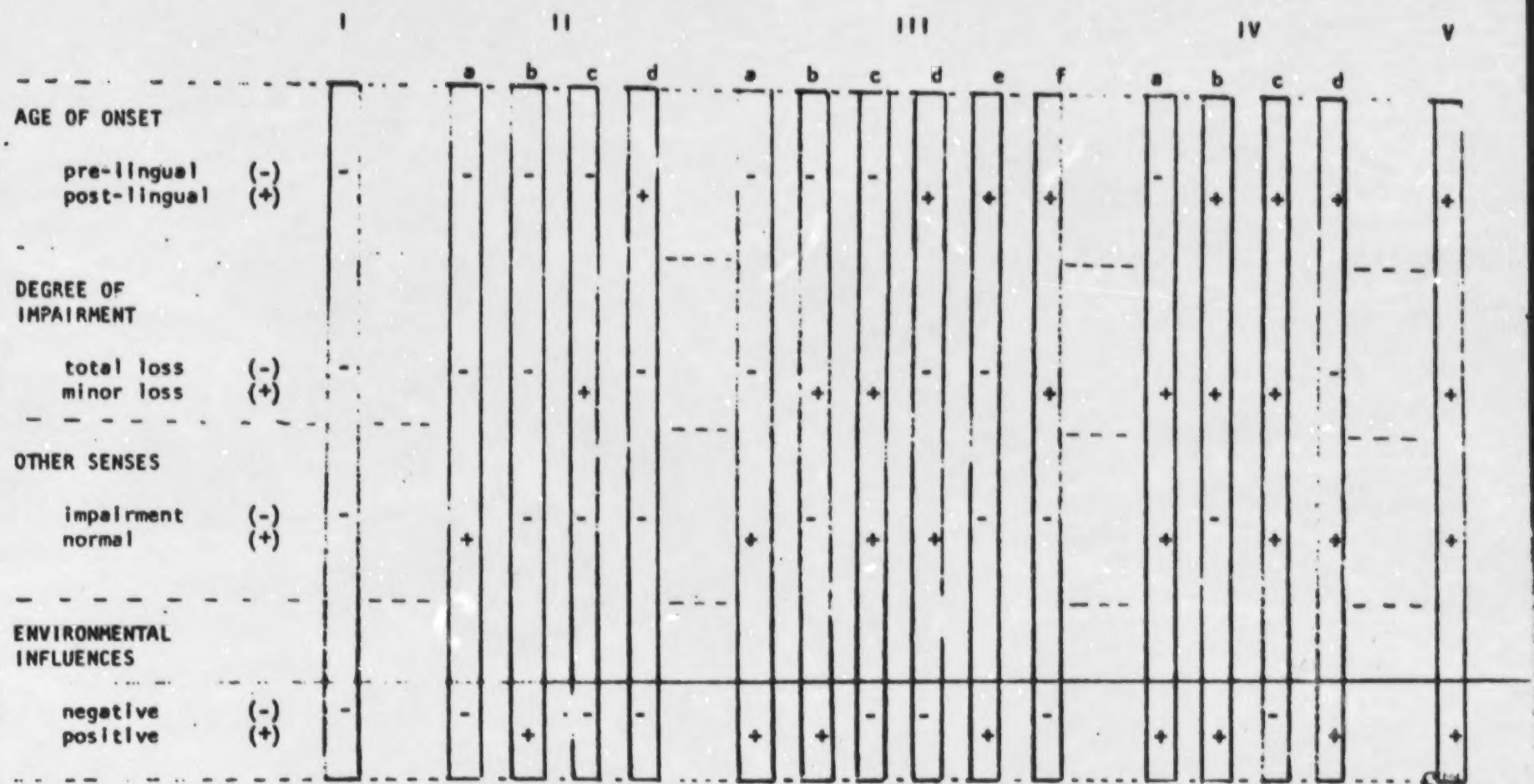
All learning ought to be, and experiential learning necessarily is, an individual process. It is personal and unique to the individual at every stage: the choice of objectives; the selection of appropriate learning activities; and the development of effective evaluation methods.

Similarly, all learners ideally ought to, and hearing-impaired learners particularly must, apprpach new learning ventures armed with a detailed self-profile of their past learning history. For hearing-impaired learners that profile must give as full an account as possible of their experiential deficiencies in knowledge and in learning skills.

Numerous assessment instruments already exist for the measurement of knowledge, and for various components of the learning skills package--including reading, writing and speaking. These resources can serve well in telling us where the hearing-impaired learner is in terms of knowledge and skills. Wherever they are applicable those various instruments should be used to develop various parts of the total picture. We need, however, to know not only where the learner is but how s/he got there. The profile of past learning, by itself, is like an inadequate daily journal or log, that tells us "what" but not "how" or "why". If the hearing-impaired learner is to have full service from the academic profession s/he must have benefit from a learning opportunity that is creatively recuperative rather than simply relfective, a plan that can recover some lost learning opportunities and develop some new strengths for future learning.

The rough model on the next page is offered as an initial approach to the development of a diagnostic instrument for analyzing the sources of the experiential deficiencies in hearing-impaired learners. It is not a measuring instrument, but a heuristic device. It cannot tell us, for any individual learner, either what the experiential deficiency is or how it got there. But, if we use other available instruments to determine the

PATTERNS OF EXPERIENTIAL DEFICIENCY



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extent of experiential deficiency, then this model gives us an approach to the problem of identifying the sources of deficiency. It is a model that outlines the questions that need to be asked. Only through individual counseling sessions can the answers be generated and the complete individual learning profile completed.

The model has three primary elements. Two of them are in the left hand vertical column: a list of the variables that may contribute to experiential deficiency; and a range of deficiency for each variable (from total deficiency indicated by minus (-) signs, to no deficiency indicated by plus (+) signs). The third element is the combination of deficiencies into patterns arranged in the vertical columns I through V along a horizontal continuum from the most severe combination (all minuses in Col. I) to the least severe combination (all plusses in Col. V). A discussion of each of these elements will underline the facts that: the model is a source of relevant questions rather than of crystal clear answers; and that it must be carefully adapted to reflect individual circumstances.

The List of Variables Contributing to Experiential Deficiency

The first three variables are all related to the physical condition of the individual learner: age of

onset; degree of impairment; and other affected sensory capacities. They are relatively easy to measure and to describe.

The other variable, environmental influences, is a collection of factors that are difficult both to define and to measure. It covers both "family inclusion" (the degree to which the hearing-impaired person is accepted as a full member of the family) and schooling.

There may be additional variables, either for all hearing-impaired learners, or for individuals. Basic intelligence, for example, is a major factor in learning capacity. It is not included on the list because it is a variable not related to hearing impairment. But, in analyzing the learning profile of an individual it must be taken into account. Similarly, the degree of motivation and other personality and attitudinal factors, may be important variables influencing the degree of experiential deficiency--but not necessarily related to hearing impairment.

In any case, the first step in using the experiential deficiency model is to make a complete list, for the individual learner, of the applicable factors. It may also be important, depending again on individual circumstances, to prioritize the list. While the model appears to suggest that the variables are of equal weight it is

probably true that their relative impact will vary.

The Range of Deficiency for Each Variable

The simplicity of the model is also misleading with respect to the range of deficiency for each of the four variables. The degree of impairment for example, is shown as either minor or total, not reflecting the many degrees of actual impairment. Instead of a simple plus or minus each of the variables must be recorded on a more complex scale reflecting the reality for each individual. While that may be relatively easy for degree of impairment, in decibels, it is an extremely complex problem for something like "family inclusion". Perhaps a five, maybe even a ten, point scale could be devised to reflect the degree to which the family environment either contributed to or prevented the growth of experiential deficiency.

Combinations of Deficiency Factors

The sixteen vertical columns shown on the model record all of the possible combinations of plus and minus scores for four variables. Column I is the most severe combination--four minuses, and Column V is the least severe--four plusses. Column II has the four possible patterns where there are three minuses and one plus. Its mirror opposite, in Column IV, shows the four possible

combinations of one minus and three plusses. Column III shows the six possible combinations of two minuses and two plusses.

Except for Columns I and V, it is not accurate to say that the five columns constitute a continuum reflecting degrees of severity from the greatest to the least. That judgment could only be made by weighting the impact of each variable. Conceivably, for example, one individual with three minuses and only one plus, might actually have a less severe deficiency than another with only two minuses.

Perhaps the best way to emphasize the contrast between the simplicity of the model and the complexity of the reality it addresses is to consider the impact of adding more variables, or of moving from a two point scale (+ and -) to a more discriminating one (5 points, 10, or even a 0-100 percentage range). If, for example, we broke environmental influences down into two variables, family and school, and had a total of five variables instead of four, the number of vertical columns, or possible combinations of plusses and minuses, would only jump from five categories to six categories. But the number of sub-columns (16 on the four variable model) would leap to 34! It staggers the imagination to think of superimposing on this explosive device the additional

complexities of, say, a ten point scale instead of a simple plus and minus rating. Clearly the model is more suggestive than it is prescriptive, it offers a way of approaching, rather than a scale for recording precisely, the complex analysis of individual deficiencies in experience.

Whether it would be worthwhile to invest research resources in a search for a more precise measurement model is uncertain. Hans Furth (1973), who has studied the experiential deficiency of hearing-impaired children intensively, is not sanguine about the possibility:

> We can never nearly isolate the variable in question and hold everything else constant... Realistically, all social and educational behavior is the outcome of many factors, and behavior in turn constantly affects these very factors so that it is impossible to devise a clean, neat experiment that would carry the conviction of an observed fact (p. 53).

Recognizing these difficulties, Furth himself, however, did not give up. The results of his research, as noted above, have continued to provide new insights toward the better understanding of a complex problem. Much has been done. More can be.

Leo Jacobs (1974), using three developmental factors, identifies nine overlapping types of deaf adults. His three factors are: "the degree and kind of deafness; the amount of native intelligence; and the environmental components, which include education, family and community" (p. 55). The nine categories are: adventitious deaf adults (ages of onset, 5 to 12); pre-lingual deaf adults who came from deaf families; other pre-lingual deaf adults; low verbal deaf adults; products of oral programs; products of public schools; uneducated deaf adults; deafened adults (post education age of onset); and hard of hearing adults (minor loss). (Jacobs, 1974, pp. 56-59)

The research problem that Furth laments may prevent us from developing a perfect model. But it would be well worth the efforts to continue the exploration of all of the variables and to explore ways in which they combine to form various categories of experiential deficiency. Experiential deficiencies exist for all individuals. The more we know about their sources and their extent, the better able we will be to find the appropriate patterns of experiential learning to serve individual hearing-impaired students.

Experiential Deficiency and Experiential Learning

How does the experiential deficiency of hearing-impaired learners affect the utility of experiential learning as a teaching strategy for them? Among the factors that affect success in experiential learning for any learner are: the knowledge base appropriate to a particular learning objective; basic intelligence; motivation to learn; and learning skills, particularly linguistic competence. Except for intelligence, each of these factors may be influenced negatively by hearing impairment. And, again excepting intelligence, each of them is subject to remediation.

In calculating the effects of experiential deficiency on experiential learning it is necessary to consider how each of these factors may influence individual performance at each step in the learning process: information acquisition; information processing; and evaluation.

One source of information is, of course the individual's accumulated store of knowledge. The greater the store of knowledge that is relevant for a particular learning objective the better. This is the first place in the process where the experiential deficiency of hearing-impaired learners may present problems. To determine whether experiential learning is a possibility without prior remediation of a knowledge deficiency, it is

necessary for the teacher or facilitator of learning to know what the knowledge prerequisites are (i.e., the learning process should be "mapped" as noted on p. 38 above).

In addition to the existing store of knowledge, success in the first step in the learning process is dependent on the capacity and opportunity for acquiring new information. The hearing-impaired learner's experiential deficiency in this respect may be strongly affected by linguistic incompetence. Certainly a vastly richer range of concrete experience is available to the communicator, oral and written. Hearing-impairment, itself, except as it may affect basic language competence, does not seriously complicate this stage of the experiential learning process. In fact, if we used the narrowest definition of experiential learning (as restricted to non-symbolic inputs), the hearing-impaired learner would suffer no disadvantage.

The disadvantages of linguistic incompetence are strongest in the second stage of experiential learning: the processing of information through reflective observation and abstract conceptualization resulting in the development of general principles. Intelligence may be the most important variable in the effectiveness of reflective observation. The very nature of the term

suggests that it refers to something that happens within. Intelligence is also a vital variable in abstract conceptualization and the development and understanding of general principles--but, these processes may be aided significantly by sophisticated symbolic inputs through linguistic media. The advantages of combining the deductive and inductive modes of learning are very much language-dependent. This is the area in which teachers and counselors of hearing-impaired college students report the greatest difficulties, and express the strongest reservations about the students' performance in traditional classroom situations. Experiential learning offers no magic alternative. Finding the right mix, for each individual student, of experiential and traditional learning modes can be very helpful. But it is doubtful that there is any effective mix that does not depend heavily on linguistic competence as a prerequisite to effective college-level learning.

In the last stage of the learning process--evaluation, including the experimental re-application of general principles in new circumstances--there are major roles not only for intelligence and motivation, but for a creative "inventiveness" factor. While language competence is facilitative it is not controlling. Hearing-impairment is pretty much on the sidelines as the

thinking process is manipulated by the learner for the related purposes of evaluating what has been learned and planning next steps.

Language competence is important at every stage of the experiential learning process. But while some parts of the process are not actually language-dependent, all parts of it are thinking-dependent. Hans Furth (1973) has suggested that we may have our priorities reversed as we consider the roles of language and thinking in the education of hearing-impaired learners:

> It is possible that the educators of deaf children could take the bold step of breaking with the unhealthy tradition that has almost completely forgotten the thinking of the growing child and put language and reading as the immediate primary goal of early education? Educators of deaf children have every reason to do so. Their clients are so poor in language that to wait for them to become good readers efore nourishing their intellectual development is an almost sure way to deny them intellectual food entirely. On the other hand, both theory and research indicate that intelligence does not build language, but rather, language builds on intelligence. Hence, if our educational aim

> is to produce adolescents who are motivated and able to read written material that can challenge their thinking, our first concern should be with the source of the intelligent use of language and not with the medium of language as such. A 'school for thinking' rather than a school for language or reading would be important for all young children, bright or dull, poor or rich, but for none is it more urgent than for deaf children. (p. 103)

Perhaps it oversimplifies the problem of experiential deficiency for hearing-impaired students to conclude that efficient thinking, not a language-dependent skill, opens the door to substantial experiential learning. And it may well be that successful development of efficient thinking skills would lead almost inevitably to linguistic competence as a by-product, even if it is not accomplished until the learner is in college. In any case there is encouraging evidence that the controllable aspects of experiential deficiency--environmental factors, including education--permit us to train hearing-impaired students to be effective thinkers and successful experiential learners.

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CAREER-RELATED LIBERAL ARTS SKILLS

DEFINITION: Liberal arts skills are transferable, functional abilities that are required in many different problem-solving and task-oriented situations. They are performance abilities that can be acquired through informal life experiences or formal education and training. Although the specific subject matter of academic disciplines is often a means for developing or refining liberal arts skills; the application of these skills is not dependent on the mastery of an academic discipline. Liberal arts skills are interdisciplinary abilities involving many areas of human development (e.g. cognitive, affective, social, psychological and moral development). They also assume competence in the basic skills of reading, writing and computation. Finally, these abilities may be possessed at different levels by different individuals ranging from unfamiliar with the skill to fully competent.

I. Information Management Skills: Ability to...

- A. sort data and objects.
- B. compile and rank information.
- C. apply information creatively to specific problems or tasks.
- D. synthesize facts, concepts and principles.
- E. understand and use organizing principles.
- F. evaluate information against appropriate standards.

II. Design and Planning Skills: Ability to...

- A. identify alternative courses of action.
- B. set realistic goals.
- C. follow through with a plan or decision.

D. manage time efficiently and effectively.

E. predict future trends and patterns.

F. accomodate multiple demands for commitment of time, energy and resources.

G. assess needs.

H. make and keep a schedule.

I. set priorities.

III. Research and Investigation Skills: Ability to...

A. use a variety of sources of information.

B. apply a variety of methods to test the validity of data.

C. identify problems and needs.

D. design an experiment, plan or model that systematically defines a problem.

E. identify information sources appropriate to special needs or problems.

F. formulate questions relevant to clarifying a particular problem, topic or issue.

IV. Communication Skills: Ability to...

A. listen with objectivity and paraphrase the content of a message.

B. use various forms and styles of written communication.

C. speak effectively to individuals and groups.

D. use media formats to present ideas imaginatively.

E. express one's needs, wants, opinions and preferences without violating the rights of others.

F. identify and communicate value judgments effectively.

G. describe objects or events with a minimum of factual errors.

H. convey a positive self-image to others.

V. Human Relations and Interpersonal Skills: Ability to...

A. keep a group "on track" and moving toward the achievement of a common goal.

B. maintain group cooperation and support.

C. delegate tasks and responsibilities.

D. interact effectively with peers, superiors and subordinates.

E. express one's feelings appropriately.

F. understand the feelings of others.

G. use argumentation techniques to persuade others.

H. make commitments to persons.

I. be willing to take risks.

J. teach a skill, concept or principle to others.

K. analyze behavior or self and others in group situations

L. demonstrate effective social behavior in a variety of settings and under different circumstances.

M. work under time and environmental pressures.

VI. Critical Thinking Skills: Ability to...

A. identify quickly and accurately the critical issues when making a decision or solving a problem.

B. identify a general principle that explains related experiences or factual data.

C. define the parameters of a problem.

D. identify reasonable criteria for assessing the value or appropriateness of an action or behavior.

E. adapt one's concepts and behavior to changing conventions and norms.

F. apply appropriate criteria to strategies and action plans.

G. take given premises and reason to their conclusions.

H. create innovative solutions to complex problems.

I. analyze the interrelationships of events and ideas from several perspectives.

VII. Management and Administration Skills: Ability to...

A. analyze tasks.

B. identify people who can contribute to the solution of a problem or task.

C. identify resource materials useful in the solution of a problem.

D. delegate responsibility for completion of a task.

E. motivate and lead people.

F. organize people and tasks to achieve specific goals.

VIII. Valuing Skills: Ability to...

A. assess a course of action in terms of its long-range effects on the general human welfare.

B. make decisions that will maximize both individual and collective good.

C. appreciate the contributions of art, literature science and technology to contemporary society.

D. identify one's own values.

E. assess one's values in relation to important life decisions.

IX. Personal/Career Development Skills: Ability to...

A. analyze one's life experiences.

B. relate the skills developed in one environment (e.g., school) to the requirements of another environment (e.g., work).

C. match knowledge about one's own characteristics and abilities to information about job or career opportunities.

D. identify, describe and assess the relative importance of one's needs, values, interests, strengths and weaknesses.

E. develop personal growth goals that are motivating.

F. identify and describe skills acquired through formal education and general life experience.

G. identify one's strengths and weaknesses.

H. accept and learn from negative criticism.

I. persist with a project when faced with failure unless it is clear that the project cannot be carried out or is not worth the time or effort needed to complete it.